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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/577,312

04/28/2006

Hiroyuki Takamura

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EXAMINER

TAOUSAKIS, ALEXANDER P

ART UNIT

PAPER NUMBER

3726

MAIL DATE

DELIVERY MODE

06/01/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/577,312	Applicant(s) TAKAMURA, HIROYUKI	
	Examiner ALEXANDER P. TAOUSAKIS	Art Unit 3726	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 February 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 6-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 6-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1 and 6-7 are rejected under 35 U.S.C. 103(a) as being obvious over Ohara et al (6,775,908) in view of Barth et al (6,438,836), in view of Nigarura et al (7,314,498) and further in view of Basler et al (6,478,074).

1, 6-7. Ohara et al teaches a method of manufacturing a camshaft (*see column 1 lines 6-13*), comprising subjecting the cam lobe to a residual compressive stress addition treatment (*see column 10 lines 25-36, where it discloses subjecting the inner section of*

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the cam lobe piece to carburizing hardening), then joining the cam lobe to a camshaft (see column 10 lines 37-38 and note that the cam lobe has been shaped); and wherein an outer peripheral surface of the cam lobe is also subjected to treatment for residual compressive stress addition treatment prior to joining the cam lobe to the camshaft (see column 10 lines 25-38).

Ohara et al fail to teach residual compressive stresses on the inner circumferential surface and the outer peripheral surface of the cam lobe is no less than 100 MPa, a specific composition of the lobe and shot-peening, barrel polishing or carbonitriding.

Barth et al teaches compressive stress on a inner circumferential surface of the cam lobe up to 250 (MPa) N/mm² and a compressive stress of 200 (Mpa) N/mm² on the outer peripheral surface of the cam lobe (see column 3 lines 63-67 – column 4 lines 1-4, and note that these compresses stress).

Nigarura et al teach a cam lobe comprising an iron-based alloy including 0.8 to 1.2% by mass of carbon, 0.5 to 4.0% by mass of nickel, 0.1 to 2.0% by mass of molybdenum, and incidental impurities (see column 4 lines 17-25 and Table 4 in column 7).

Basler et al teach carbonitriding a camshaft (see column 3 lines 38-42).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to treat the cam lobe of Ohara et al to a compressive stress of 250 N/mm²

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and 200 N/mm² on its inner and outer surfaces, respectively, as taught by Barth et al, because it will prevent cracking during joining (*see column 3 lines 29-30*). It would have been obvious to produce the cam lobe of Ohara et al out of an iron-based alloy with the composition of Nigarura et al, because the composition has superior wear resistance (*see Nigarura et al column 3 lines 14-18*). Furthermore, it would have been obvious to harden the cam lobe of Ohara et al by carbonitriding, as taught by Basler et al, because it is inexpensive to apply and produces a very hard, wear resistant layer.

Response to Arguments

Applicant's arguments filed 02/24/2010 have been fully considered but they are not persuasive.

Applicant argues that Ohara et al fail to teach a residual compressive stress not being less than 100 MPa. The Examiner acknowledges this fact in the above Rejection and the Office Action dated 09/24/2009. Barth et al is applied as a reference in combination with Ohara et al to teach the specific residual stress.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

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mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEXANDER P. TAOUSAKIS whose telephone number is (571)272-3497. The examiner can normally be reached on M-F 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Bryant can be reached on (571) 272-4526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Alexander P Taousakis
Examiner
Art Unit 3726

/Alexander P Taousakis/
Examiner, Art Unit 3726

/DAVID P. BRYANT/
Supervisory Patent Examiner, Art Unit 3726